

Fleas of Western North America. Their Relation to Public Health¹

(A Review)

By C. E. PEMBERTON

This profusely illustrated volume treats of 66 genera and 236 species and subspecies of fleas occurring within that great area of North America west of the 100th meridian. The author has well stated that this region is the "flea collector's paradise." It becomes particularly so with the present volume in the collector's hands. Any ambitious entomologist seeking some group of insects in which to specialize, would find this book an ideal guide and stimulus to the study of fleas. Those who are already familiar with the published work of important contributors to flea taxonomy in this region will be much interested to see the excellent photographs of 15 of the pioneer and modern workers, and to read the pertinent comment on their accomplishments.

With the many hundreds of excellent drawings, clearly reproduced and labeled, one is able to interpret the keys and descriptions particularly well. Since the identification of fleas can only be accomplished through a study of characters discernible under the microscope, the proper preparation of slide mounts is of the greatest importance. In this, the laboratory technique adopted by the author is given in careful detail in Chapter 3. By following these instructions the technician will have not only beautiful material to work with, but also, in the words of the author, "something of which he can be justly proud." It is gratifying to note that considerable emphasis is given to this subject.

Summarized in Chapter 2 is a brief but comprehensive history of fleas in relation to public health in western North America, and in Chapter 4, which treats of the anatomy of the flea in relation to its taxonomy, the student will find very helpful instruction accompanied by series of good illustrations.

Finally, in Part III, appears an elaborate host index, composed of some 120 pages of exceedingly useful information. It is much more than an index since data are included on the geographical distribution of the hosts, their nesting habits, their relation to tula-

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remia, plague and murine typhus, and in addition is given much descriptive matter by which many of the hosts may be identified. This index, together with practical instruction on methods of trapping the various hosts, found in Chapter 3, will prove invaluable to entomologists investigating fleas in western North America.

Concluding with a selected bibliography, a synonymic index, a rapid checking index, an authors' index and a complete general index, little is left to be desired, all in a single volume, by future students of fleas within the territory covered by the monograph.